

CLAIMS

What is claimed is:

1. A method of generating a test design for a programmable logic device (PLD), the test design utilizing target routing resources of the PLD targeted for testing, the method comprising:

- loading an unrouted design;

- identifying nets in the unrouted design that can be used to test the target routing resources and setting sources of the identified nets as router source targets;

- processing each target routing resource by:

- setting the target routing resource as a router starting point,

- routing backwards from the target routing resource to one of the router source targets,

- identifying a net by the source routed to and setting a load of the net as a router load target,

- routing forwards from the target routing resource to the router load target, and

- marking the routing resources used by the net as tested; and

- routing a remainder of the unrouted design to create the test design.

2. The method of Claim 1, wherein identifying nets in the unrouted design that can be used to test the target routing resources comprises identifying all nets in the unrouted design that can be used to test the target routing resources.

3. The method of Claim 1, further comprising loading a list of the targeted routing resources, and wherein marking the routing resources used by each net as tested comprises marking the routing resources used by each net as tested in the list of the targeted routing resources.

4. The method of Claim 1, further comprising repeating the loading, identifying, processing, and routing if some of the targeted routing resources were not successfully processed.

5. The method of Claim 1, wherein for each target routing resource, routing forwards from the routing resource to the router load target comprises:

routing forwards from the target routing resource to a first router load target; and

setting, if the routing forwards is unsuccessful, a new router load target comprising another load of the identified net, and routing from the target routing resource forwards to the new router load target.

6. The method of Claim 1, further comprising:

marking routing resources that are not yet tested to receive a router expansion bonus.

7. The method of Claim 1, wherein the routing backwards, identifying, and routing forwards are performed sequentially.

8. The method of Claim 1, wherein at least two of the routing backwards, identifying, and routing forwards are performed interactively one with another.

9. A computer-readable storage medium comprising computer-executable code for generating a test design for a programmable logic device (PLD), the test design utilizing target routing resources of the PLD targeted for testing, the medium comprising:

code for loading an unrouted design;

code for identifying nets in the unrouted design that can be used to test the target routing resources and for setting sources of the identified nets as router source targets;

code for processing each target routing resource,  
comprising:

- code for setting the target routing resource as a router starting point,

- code for routing backwards from the target routing resource to one of the router source targets,

- code for identifying a net by the source routed to and setting a load of the net as a router load target,

- code for routing forwards from the target routing resource to the router load target, and

- code for marking the routing resources used by the net as tested; and

- code for routing a remainder of the unrouted design to create the test design.

10. The computer-readable storage medium of Claim 9, wherein the code for routing backwards, the code for identifying, and the code for routing forwards act independently from each other.

11. The computer-readable storage medium of Claim 9, wherein at least two of the code for routing backwards, the code for identifying, and the code for routing forwards are interactive one with another.

12. A computer system for generating a test design for a programmable logic device (PLD), the test design utilizing target routing resources of the PLD targeted for testing, the system comprising:

- a design loading module for loading an unrouted design;

- a net identification module for identifying nets in the unrouted design that can be used to test the target routing resources and for setting sources of the identified nets as router source targets;

- a resource processing module for processing each target routing resource, comprising:

a first module for setting the target routing resource as a router starting point,

a second module for routing backwards from the target routing resource to one of the router source targets,

a third module for identifying a net by the source routed to and setting a load of the net as a router load target,

a fourth module for routing forwards from the target routing resource to the router load target, and

a fifth module for marking the routing resources used by the net as tested; and

a routing module for routing a remainder of the unrouted design to create the test design.

13. The computer system of Claim 9, wherein the second, third, and fourth modules act independently from each other.

14. The computer system of Claim 9, wherein at least two of the second, third, and fourth modules are interactive one with another.

15. A method of generating a test design for a programmable logic device (PLD), the test design utilizing target routing resources of the PLD targeted for testing, the method comprising:

loading an unrouted design;

identifying nets in the unrouted design that can be used to test the target routing resources and setting loads of the identified nets as router load targets;

processing each target routing resource by:

setting the target routing resource as a router starting point,

routing forwards from the target routing resource to one of the router load targets,

identifying a net by the load routed to and  
setting a source of the net as a source load  
target,

routing the net between the target routing  
resource and the router source target, and

marking the routing resources used by the net  
as tested; and

routing a remainder of the unrouted design to create the  
test design.

16. The method of Claim 15, wherein routing the net between  
the target routing resource and the router source target  
comprises routing the net forwards from the router source  
target to the target routing resource.

17. The method of Claim 15, wherein routing the net between  
the target routing resource and the router source target  
comprises routing the net backwards from the target routing  
resource to the router source target.

18. The method of Claim 15, wherein identifying nets in the  
unrouted design that can be used to test the target routing  
resources comprises identifying all nets in the unrouted  
design that can be used to test the target routing resources.

19. The method of Claim 15, further comprising loading a  
list of the targeted routing resources, and wherein marking  
the routing resources used by each net as tested comprises  
marking the routing resources used by each net as tested in  
the list of the targeted routing resources.

20. The method of Claim 15, further comprising repeating the  
loading, identifying, processing, and routing if some of the  
targeted routing resources were not successfully processed.

21. The method of Claim 15, further comprising:  
marking routing resources that are not yet tested to receive a router expansion bonus.
22. The method of Claim 15, wherein the routing forwards, identifying, and routing the net are performed sequentially.
23. The method of Claim 15, wherein at least two of the routing forwards, identifying, and routing the net are performed interactively one with another.
24. A computer-readable storage medium comprising computer-executable code for generating a test design for a programmable logic device (PLD), the test design utilizing target routing resources of the PLD targeted for testing, the medium comprising:  
code for loading an unrouted design;  
code for identifying nets in the unrouted design that can be used to test the target routing resources and for setting loads of the identified nets as router load targets;  
code for processing each target routing resource, comprising:  
code for setting the target routing resource as a router starting point,  
code for routing forwards from the target routing resource to one of the router load targets,  
code for identifying a net by the load routed to and setting a source of the net as a router source target,  
code for routing the net between the target routing resource and the router source target, and  
code for marking the routing resources used by the net as tested; and  
code for routing a remainder of the unrouted design to create the test design.

25. The computer-readable storage medium of Claim 24, wherein the code for routing the net between the target routing resource and the router source target comprises code for routing the net forwards from the router source target to the target routing resource.

26. The computer-readable storage medium of Claim 24, wherein the code for routing the net between the target routing resource and the router source target comprises code for routing the net backwards from the target routing resource to the router source target.

27. The computer-readable storage medium of Claim 24, wherein the code for routing forwards, the code for identifying, and the code for routing the net act independently from each other.

28. The computer-readable storage medium of Claim 24, wherein at least two of the code for routing forwards, the code for identifying, and the code for routing the net are interactive one with another.

29. A computer system for generating a test design for a programmable logic device (PLD), the test design utilizing target routing resources of the PLD targeted for testing, the system comprising:

- a design loading module for loading an unrouted design;
- a net identification module for identifying nets in the unrouted design that can be used to test the target routing resources and for setting loads of the identified nets as router load targets;

- a resource processing module for processing each target routing resource, comprising:

- a first module for setting the target routing resource as a router starting point,

a second module for routing forwards from the target routing resource to one of the router load targets,

a third module for identifying a net by the load routed to and setting a source of the net as a router source target,

a fourth module for routing the net between the target routing resource and the router source target, and

a fifth module for marking the routing resources used by the net as tested; and

a routing module for routing a remainder of the unrouted design to create the test design.

30. The computer system of Claim 29, wherein the fourth module routes the net forwards from the router source target to the target routing resource.

31. The computer system of Claim 29, wherein the fourth module routes the net backwards from the target routing resource to the router source target.

32. The computer system of Claim 29, wherein the second, third, and fourth modules act independently from each other.

33. The computer system of Claim 29, wherein at least two of the second, third, and fourth modules are interactive one with another.